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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/030,482	02/25/98	SNUTCH T	NMED.P-001

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KATE H. MURASHIGE
MORRISON & FOERSTER LLP
12636 HIGH BLUFF DRIVE
SUITE 300
SAN DIEGO CA 92130-2071

EXAMINER	
BASI,N	
ART UNIT	**PAPER NUMBER**
1646	14

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/030,482	Applicant(s) Snutch et al
	Examiner Nirmal. S. Basi	Group Art Unit 1646

☒ Responsive to communication(s) filed on *Oct 13, 2000* .

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *16-33* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *16-33* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☒ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

1. Amendment filed 10/13/00 has been entered.

2. Applicant has canceled claims 1-15 and added new claims 16-33.

Specification

3. The disclosure is objected to because of the following informalities:

The drawings remain objected to because each Figure must described separately in the Brief Description of the Drawings. Figure 1 is contained on two separate sheets. Figure 1 must be labeled as Figure 1A and Figure 1B and described in the Brief Description of the Drawings as Figures 1A-1B or the equivalent, as required by 37 C.F.R. § 1.84 (u)(1).

On page 13, lines 23-25, applicant suggests a translated sequence is represented by SEQ ID NO:18, said sequence represent polynucleotide and not polypeptide.

Appropriate correction is required.

Sequence Rules Compliance

4. Applicants response that the sequence listing to Fig 1A and 1B is forthcoming is noted. Also, Applicants response that a sequence listing complying with the appropriate rules, contain the corrections and includes deduced amino acid sequences as SEQ ID NOs:18 and 19 will be submitted. Until the afore mentioned sequence listing are submitted the application fails to comply with the sequence rules, 37 CFR 1.821-1.825. Nucleotide and polypeptide sequences must be identified with the corresponding SEQ ID NO. Title 37, Code of Federal Regulations, Section

1.821 states "reference must be made to the sequence by use of the assigned identifier", the identifier being SEQ ID NO. Sequences in Figures 1 must be identified by their corresponding SEQ ID NO:.

Claim Rejection, 35 U.S.C. 112, second paragraph

5. Claims 16-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 16, 19, 25 and 28 are indefinite because "Medium hybridization stringency" conditions are not disclosed. The metes and bounds of the group of sequences that would meet the limitations of the claim depend upon the precise conditions under which hybridizations were performed including wash conditions. The disclosure by Dr. Terry P. Snutch does not overcome the examiners rejection because the hybridization and wash conditions dictate which DNA sequences remain specifically bound to the DNA of SEQ ID NO:18 or 19, the metes and bounds of the claims cannot be determined without the disclosure of said conditions. The disclosure by Dr. Terry P. Snutch does not overcome the deficiency in the specification which does not disclose "Medium hybridization stringency", used in instant claims.

Claims 16, 19, 23, 24, 25, 28 and 32-33 are indefinite because the name α_1 subunit of a calcium channel has not been defined in the claims and specification so as to allow the metes and bounds of the claims to be determined. The name α_1 subunit does not sufficiently serve to characterize said polypeptide. The application has disclosed a partial sequences for the polynucleotide represented by SEQ ID NOs:18 and 19. The name α-$_1$ subunit encompasses the complete sequence

and therefore does not sufficiently serve to characterize said protein. Without knowledge of the structure and function of the claimed subunit the metes and bounds of the claim cannot be determined.

Claims 16, 17, 19, 20, 25, 26, 28 and 29 are indefinite because SEQ ID NOs: 18 and 19 are nucleotide sequences and not amino acid sequences therefore it is not clear what sequences the Applicant is referring to when stating, " amino acids set forth in SEQ ID NO:19" and " amino acids set forth in SEQ ID NO:18". It is suggested that the Applicant review accuracy of all sequences identifiers referred to in the claims and specification.

Claims 18,21-22, 27, 30 and 31 are indefinite for depending on a base claim or intermediate claim and fail to resolve the issues raised above.

Claim Rejections - 35 USC § 101 and 35 USC § 112, 1st paragraph

The following is a quotation of 35 U.S.C. 101:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 16-33 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility. Applicants arguments as they pertain to canceled claims 1-11 and 13-14 and now applied to new claims 16-33 have been fully considered but not found persuasive.

A "specific utility" is a utility that is specific to the subject matter claimed, as opposed to a "general utility" that would be applicable to the broad class of the invention. A "substantial utility" is a utility that defines a "real world" use. Utilities that require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use are not substantial utilities. A "well established utility" is a utility that is well known, immediately apparent, or implied by the specification's disclosure of the properties of a material, alone or taken with the knowledge of one skilled in the art. A "well established utility" must also be specific and substantial as well as credible.

Based on the record, there is not a "well established utility" for the claimed invention.

Applicant has asserted utilities for the specifically claimed invention of claims 16-33. For example, the specification at page 6 asserts that, "the present invention provides partial sequences for novel mammalian (human and rat sequences identified) calcium channel subunit", and knowledge of the polypeptides encoded by the claimed invention "permits the localization and recovery of the complete sequence from human cells, and the development of cell lines which express the novel channel proteins of the invention. These cells may be used for identifying compounds capable of acting as agonists or antagonists to the calcium channels". Further stated on page 9, "since defects

in the novel calcium channel subunits may be associated with a human genetic disease including, but not limited to; epilepsy, migraine, ataxia, hypertension, arrhythmia, angina, depression, small lung carcinoma. Lambert-Eaton syndrome, characterization of such associations and ultimately diagnosis of associated diseases can be carried out with probes which bind to the wild-type or defective forms of the novel calcium channels". In the applicants arguments filed 10/13/00 no disclosure is made of how to use the polynucleotide of instant invention. The applicant argues that since the polynucleotide is essential for normal physiology then said polynucleotide is intrinsically and inherently useful. Applicants arguments have been fully considered but not found persuasive.

The utilities asserted by Applicant are not specific or substantial. Neither the specification nor the art of record disclose any disease states treatable by the claimed polynucleotides or polypeptides encoded by them. Similarly, neither the specification nor the art of record disclose any instances where blocking any effects of the claimed polynucleotides or polypeptides encoded by them reduces the effect of a disease state. Thus the corresponding asserted utilities are essentially methods of treating unspecified, undisclosed diseases or conditions, which does not define a "real world" context of use. Treating an unspecified, undisclosed disease or condition would require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use especially when the complete sequence of the claimed invention is not known. Since neither the specification nor the art of record disclose any activities or properties that would constitute a "real world" context of use for the claimed polynucleotides or the polypeptides encoded by them, further experimentation is necessary to attribute a utility to the claimed polynucleotides and encoded polypeptides. See

Brenner v. Manson, 383 U.S. 519, 535–36, 148 USPQ 689, 696 (1966) (noting that "Congress intended that no patent be granted on a chemical compound whose sole 'utility' consists of its potential role as an object of use-testing", and stated, in context of the utility requirement, that "a patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion.").

7. Claims 16-33 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Further hybridization conditions of claims 16, 19, 25 and 28 are indefinite, as stated in the claim rejection under 35 U.S.C. 112 , second paragraph. The hybridization conditions recited in the claims do not constitute a meaningful structural limitation and the claim recite no functional language. The instant fact pattern closely resembles that in Ex parte Maizel, 27 USPQ2d 1662 (BPAI 1992). In Ex parte Maizel, the claimed invention was directed to compounds which were defined in terms of function rather than sequence (i.e., "biologically functional equivalents"). The only disclosed compound in both the instant case and in Ex parte Maizel is the, naturally occurring compound, polynucleotide represented by SEQ ID NOs: 18 and 19, in instant application. The Board found that there was no reasonable correlation between the scope of exclusive right desired by Appellant and the scope of enablement set forth in the patent application. Even though Appellant in Ex parte Maizel urged that the biologically functional equivalents consisted of proteins having amino acid

substitutions wherein the substituted amino acids had similar hydrophobicity and charge characteristics such that the substitutions were "conservative" and did not modify the basic functional equivalents of the protein, the Board found that the specification did not support such a definition, and that the claims encompassed an unduly broad number of compounds. Such is the instant situation. Clearly, a disclosed partial polynucleotide sequence does not support claims to nucleic acid hybridizing to same, given the lack of guidance regarding what sequences would hybridize specifically to SEQ ID NOs: 18-19, and not other, related sequences. Further the claims drawn to cells of claims 22, 31 comprising isolated DNA molecules and used in the method for producing protein, claims 23, 24 and 32-33 are not enabled for these reasons given above.

8 Claims 16-33 rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The instant specification does not contain a written description of the invention in such full, clear, concise, and exact terms or in sufficient detail that one skilled in the art can reasonably conclude that applicant had possession of the claimed invention at the time of filing.

Examiner has assumed claims 16-33 are directed to DNA fragments comprising SEQ ID NOs:18 and 19, polynucleotides that hybridize to said fragments, cells contain said fragments and methods of producing calcium ion channel protein, because the claims as written refer to SEQ ID NOs 18 and 19 as polypeptides, whereas they are polynucleotides.

The claims are drawn to isolated DNA molecules

a) comprising SEQ ID NOs: 18 or 19

b) nucleic acid that hybridizes to DNA molecule comprising SEQ ID NOs: 18 and 19.

c) cells contain a) or b)

d) method of producing calcium channel protein using c)

The specification, on page 9, lines 14-16, discloses instant application contains partial polynucleotide sequences of a calcium channel subunit and the applicant indicates, "These subunits are believed to represent two new types of α_1 subunits of human voltage-dependent calcium channels which have been designated as type α_{1I} and type α_{1H}", and further states, "The novel α_1 subunits of the invention were identified by screening the *C. Elegans* genomic DNA sequence data base for sequence homologous to previously identified mammalian calcium channel α_1 subunits. The specification discloses isolated cDNA sequence, SEQ ID NO: 18 and 19. Absent evidence to the contrary, each of the SEQ ID NOs: 18 and 19 elected for examination is deemed to be an incomplete cDNA . Because the cDNAs that correspond to the SEQ ID NOS mentioned in the claims are not full-length, a sequence prepared from undefined parts of a cDNA clone will not comprise the entire coding region of any particular gene, nor is it clear the partial sequence is even in frame to encode a polypeptide. The specification nor prior art discloses that the DNA claimed encodes a functional protein, nor what that function is. The claims, as written, however, encompass polynucleotides which vary substantially in length and also in nucleotide composition. The broadly claimed genus additionally, encompasses calcium ion channel polypeptides genes whose encoded protein, as well

as genes incorporating only portions of the disclosed sequence as well as chimeric constructs and variants.

The instant disclosure of a single species of nucleic acid does not adequately describe the scope of the claimed genus, which encompasses a substantial variety of subgenera including full-length genes. A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus or of a recitation of structural features common to members of the genus, which features constitute a substantial portion of the genus. *Regents of the University of California v. Eli Lilly & Co.*, 119 F3d 1559, 1569, 43 USPQ2d 1398, 1406 (Fed. Cir. 1997). The instant specification fails to provide sufficient descriptive information, such as definitive structural or functional features of the claimed genus of polynucleotides. There is no description of the conserved regions which are critical to the structure and function of the genus claimed. The specification proposes to discover other members of the genus by using hybridization techniques. There is no description, however, of the sites at which variability may be tolerated and there is no information regarding the relation of structure to function. Structural features that could distinguish the compounds in the genus from others excluded are missing from the disclosure. Furthermore, the prior art does not provide compensatory structural or correlative teachings sufficient to enable one of skill to isolate and identify the polynucleotides encompassed and no identifying characteristic or property of the instant polynucleotides is provided such that one of skill would be able to predictably identify the encompassed molecules as being identical to those instantly claimed.

The specification further fails to identify and describe the 5' and 3' regulatory regions and untranslated regions essential to the function of the claimed invention, which are required since the claimed invention currently encompasses the gene. The art indicates that the structures of genes with naturally occurring regulatory elements and untranslated regions is empirically determined. Therefore, the structure of these elements is not conventional in the art and skilled in the art would therefore not recognize from the disclosure that applicant was in possession of the genus of nucleic acid, including genes, comprising SEQ ID NO: 18 and 19 or fragments thereof. Further vectors containing genomic DNA nor cells containing said vectors are disclosed. Further methods of using said genomic DNA are rejected for the reasons given above.

Since the disclosure fails to describe the common attributes or characteristics that identify members of the genus, and because the genus is highly variant, the disclosure of specific nucleotide sequences and the ability to screen, is insufficient to describe the genus. One of skill in the art would reasonably conclude that the disclosure fails to provide a representative number of species to describe and enable the genus as broadly claimed. Although the nucleotide of SEQ ID NO:18 and 19 may encode a α_1 subunit of calcium channel the disclosure no prior art disclose any polynucleotides that may bind the polynucleotide of SEQ ID Nos:18 and 19 and encode α_1 subunit of calcium channel. An adequate written description of a DNA, such as the cDNA of instant application, "requires a precise definition, such as by structure, formula, chemical name, or physical properties," not a mere wish or plan for obtaining the claimed chemical invention. *Fiers v. Revel* , 984 F.2d 1164, 1171, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993). Accordingly, "an adequate written description of a DNA

requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it; what is required is a description of the DNA itself." Id. at 1170, 25 USPQ2d at 1606. (page 1404)

No claim is allowed.

Applicant's amendment necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL**. See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

Advisory Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nirmal Basi whose telephone number is (703) 308-9435. The examiner can normally be reached on Monday-Friday from 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler, can be reached on (703) 308-6564. The fax phone number for this Group is (703) 308-0294.

Official papers filed by fax should be directed to (703) 308-4242. Faxed draft or informal communications with the examiner should be directed to (703) 308-0294.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Nirmal S. Basi
Art Unit 1646
January 15, 2001

Yvonne Eyler
YVONNE EYLER, PH.D
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600